METHOD AND APPARATUS FOR AN INTERCHANGEABLE WIRELESS MEDIA STREAMING DEVICE

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This is a continuation of, and claims the benefit of, U.S. non-provisional patent application Ser. No. 16/000,427, filed on Jun. 5, 2018, which is itself a continuation of U.S. non-provisional patent application Ser. No. 15/889,510, filed on Feb. 6, 2018, which itself is a continuation of U.S. non-provisional patent application Ser. No. 15/782,563, filed on Oct. 12, 2017, which is itself a continuation of U.S. non-provisional patent application Ser. No. 15/474,410, filed on Mar. 30, 2017, which is itself a continuation in part of U.S. non-provisional patent application Ser. No. 15/406,170, filed on Jan. 13, 2017, which is itself a continuation of U.S. non-provisional patent application Ser. No. 15/336,165, filed on Oct. 27, 2016, which itself is a continuation of U.S. non-provisional patent application Ser. No. 15/074,271, filed on Mar. 18, 2016, which itself is a non-provisional of, and claims the benefit of, provisional patent application 62/177,607, filed on Mar. 19, 2015. Each of those applications is hereby incorporated by reference in its entirety.

FIELD

[0002] The technology disclosed herein can be applied to the transmission and processing of streaming data. In certain preferred embodiments of the disclosed technology, streaming video is captured by cameras mounted in a self-contained hat clip enclosure at a sporting event and processed through the application of customized stabilization algorithms in real time by one or more remote devices.

BACKGROUND

[0003] When streaming data, the objective of providing high fidelity real time information must often be balanced against the need to work within technical limitations of the devices and infrastructure used in that streaming. For example, the bandwidth of the channel over which data is being streamed imposes a limit on the amount of information that the streaming data can include. Similarly, the speed with which a device is able to process data imposes a limit on the amount of data that can be streamed through that device. These limitations can become even more acute when multiple data streams have to be handled simultaneously, and when operating in a context which is subject to communication errors or other types of failures. In some contexts, these limitations can be so severe that certain types of applications, such as real time streaming of multiple video feeds over a wireless communication network, simply have not been feasible. Accordingly, there has been a need in the art for improved technology to accommodate streaming data, particularly in contexts where streaming data from multiple sources is transmitted over a failure prone communication channel and requires some level of processing for delivery.

SUMMARY

[0004] Disclosed herein is technology which can be implemented in a variety of manners, including systems and methods for allowing a plurality of video streams transmitted wirelessly from a plurality of sources to be processed and made available for viewing within limitations associated with the wireless transmission or subsequent processing of video. Other ways of implementing the disclosed technology are also possible, and so the material set forth in this summary should be understood as being illustrative only, and should not be treated as limiting.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] The drawings and detailed description which follow are intended to be merely illustrative and are not intended to limit the scope of the invention as set forth in the appended claims.

[0006] FIG. **1** depicts an environment in which aspects of the disclosed technology could be deployed.

[0007] FIG. **2** depicts an exemplary embodiment of an instrumented helmet which could be used in the environment of FIG. **1**.

[0008] FIG. **3** depicts steps which could be used to account for problems in wireless communication of streaming data.

[0009] FIG. **4** depicts an exemplary embodiment of an instrumented helmet which could be used in the environment of FIG. **1**.

[0010] FIG. **5** depicts an exemplary interface which could be used to determine the extent to which smoothing offsets should be applied to a video stream.

[0011] FIG. **6** depicts a top perspective view of an exemplary embodiment of a hat clip enclosure which could be used in the environment of FIG. **1**.

[0012] FIG. **7**A depicts a top perspective view of the hat clip enclosure of FIG. **6** coupled to a brim of a hat.

[0013] FIG. **7**B depicts a bottom perspective view of the hat clip enclosure of FIG. **6** coupled to a brim of a hat.

[0014] FIG. **8** depicts a top plan view of the hat clip enclosure of FIG. **6**.

[0015] FIG. **9** depicts a bottom plan view of the hat clip enclosure of FIG. **6**.

[0016] FIG. **10** depicts a front view of the hat clip enclosure of FIG. **6**.

[0017] FIG. **11** depicts a cross-sectional view of the hat clip enclosure of FIG. **6** taken along line **11-11** of FIG. **8**.

[0018] FIG. **12** depicts an exploded view of the hat clip enclosure of FIG. **6**.

[0019] FIG. **13** depicts a top perspective view of the hat clip enclosure of FIG. **6** with the case removed.

[0020] FIG. **14** depicts a bottom perspective view of the hat clip enclosure of FIG. **6** with the case removed.

[0021] FIG. **15** depicts a schematic of the hat clip enclosure of FIG. **6**.

DETAILED DESCRIPTION

[0022] Disclosed herein is novel technology which can be used for a variety of purposes, including capturing, transmitting and processing video information obtained using cameras mounted on the bodies of athletes participating in a sporting event. It should be understood that, while the present disclosure focuses on embodiments in which the disclosed technology is used for transmitting and smoothing video captured using cameras mounted in football helmets, the disclosed technology can be used in other contexts as well, such as in other sports (e.g., hockey, lacrosse, skiing, baseball, etc) or in non-sporting contexts (e.g., to smooth video captured by a dashcam for a car or a wearable camera).